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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,904	01/31/2001	Mamoru Takahashi	1155-0214P	8530
2292	7590	11/23/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			LEE, RIP A	
			ART UNIT	PAPER NUMBER

1713

DATE MAILED: 11/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/744,904	TAKAHASHI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Rip A. Lee	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 August 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-22 and 24-77 is/are pending in the application.
- 4a) Of the above claim(s) 44-77 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-28 and 34-43 is/are allowed.
- 6) ☒ Claim(s) 29 is/are rejected.
- 7) ☒ Claim(s) 30-33 is/are objected to.
- 8) ☒ Claim(s) 1,3-22 and 24-77 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                         |                                                                             |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)     | Paper No(s)/Mail Date. _____                                                |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____                                                             | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

This office action follows a response filed on August 27, 2004. Applicants have amended claims 1, 5, 12, 13, 16-22, 24-27, 32-34, 37, 38, and 43. Claim 23 was canceled.

#### *Claim Rejections - 35 USC § 102*

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,260,384 to Morimoto *et al.*

As indicated previously, Example 4 of Morimoto *et al.* discloses a polyethylene which displays a melt tension of 70, a swell ratio of 1.9, an intrinsic viscosity of 4.71 and MFR of 2.9. Since both equations ( $i_{A3}$ ) and ( $ii_{A3}$ ) are satisfied, the subject matter of claim 29 is anticipated by Morimoto *et al.*

#### *Response to Arguments*

3. Applicants traverse the rejection of claim 29 under 35 U.S.C. 102(b) as being anticipated by Morimoto *et al.* Applicants contend that the relationship presented as ( $ii_{A3}$ ) can not be satisfied because the melt flow rate was measured under a load of 21.6 kg instead of 2.16 kg as required by the present claim. The data have been reviewed, and Applicants are correct in their observation. However, it is deemed that the prior art material still meets the requisite features of claim 29, as the following discussion will show.

As indicated by Applicants, high load melt flow rate (HLMFR) is performed at 190 °C under a load of 21.6 kg. In contrast, melt flow rate (MFR) is performed at 190 °C under a load of 2.16 kg. Since the force is considerably less, by definition, the HLMFR is greater than MFR for the same material. The polymer presented in example 4 of Morimoto *et al.* exhibits a HLMFR value of 2.9. It follows that MFR is necessarily less than 2.9.

According to the present claims, polymers of the invention exhibit the following relationship between intrinsic viscosity,  $[\eta]$ , and melt flow rate:

$$[\eta] > 1.85 \text{ MFR}^{-0.192} \text{ when MFR} < 1$$

$$[\eta] > 1.85 \text{ MFR}^{-0.213} \text{ when MFR} \geq 1$$

A series of calculations may be performed to determine whether the governing inequalities shown above are satisfied by polymers of the prior art. It is known that MFR values will be less than 2.9. If we let  $\text{MFR} = 2.8$ , the lower limit of intrinsic viscosity may be calculated as:  $[\eta] > (1.85)(2.8)^{-0.213}$ , such that  $[\eta] > 1.48$ . From Example 4, it can be seen that polymer of the prior art has an intrinsic viscosity of 4.71, and this value is greater than the calculated value of 1.48. Therefore, the limitation imposed by relationship (ii<sub>A3</sub>) is satisfied.

A range of MFR data points less than 2.9 was also considered. For  $\text{MFR} = 1$ ,  $[\eta] > 1.85$ ; for  $\text{MFR} = 0.1$ ,  $[\eta] > 2.87$ ; and for  $\text{MFR} = 0.01$ ,  $[\eta] > 4.47$ . Thus, it is apparent that the polymer of Morimoto *et al.* will exhibit the claimed properties.

In view of this discussion, the rejection of record has not been withdrawn.

4. Claims 30-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Allowable Subject Matter***

5. As indicated in the previous office action, claims 1 and 3-12 are allowed over the closest references, U.S. Patent No. 5,747,620 to Machida *et al.*, U.S. Patent No. 6,194,341 to Canich *et al.*, U.S. Patent No. 6,153,716 to Welch *et al.* Synopses of the prior art have been presented previously, and need not be repeated here.

Claims 13-22 and 24-28 are allowed over the closest reference, U.S. Patent No. 5,798,305 to Horiuchi. Claim 13 is drawn to an ethylene homopolymer or a copolymer of ethylene and a C<sub>4-20</sub>  $\alpha$ -olefin containing less than 0.1 methyl branches per 1000 carbon atoms and a polydispersity,  $M_w/M_n$ , of 5.5-50. Horiuchi teaches a polyethylene polymer having 0-1.5 methyl branches per 1000 carbon atoms and  $M_w/M_n$  of 4.5 or less. The molecular weight distribution of polymers of the prior art lies outside the claimed range.

Claims 34-38 are allowed over the closest reference, U.S. Patents No. 5,731,393 to Kojoh *et al.* and 6,294,631 to Brant, and JP 8-302083. Claim 34 is drawn to an ethylene homopolymer or a copolymer of ethylene and a C<sub>3-20</sub>  $\alpha$ -olefin having a molecular weight distribution greater than 9.2 and the ratio  $M_z/M_w$  defined by the expression,  $M_z/M_w \geq 4 / (0.5 - 4.50 / ((M_w/M_n) - 0.2))$ . None of the polymers in the cited patents meets the claimed limitation of  $M_z/M_w$ .

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Claims 39-43 are allowed over references cited to date. The claims are drawn to an ethylene homopolymer or a copolymer of ethylene and a C<sub>3-20</sub>  $\alpha$ -olefin having at least two maxima and at least one minimum in the GPC molecular weight distribution curve in which the intensity of the minimum value, W<sub>1</sub>, and the lower intensity of the maxima, W<sub>2</sub>, satisfy the inequality  $W_1/W_2 < 0.85$ . The subject matter of these claims is not taught or fairly suggested in the prior art.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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November 19, 2004



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